Fact Sheet #4 - October 2002

US ARMY CORPS
OF ENGINEERS
New England District

Long Island Sound
Dredged Material Disposal Site Designation EIS
Collection of Marine Biota for Contaminant Analysis

Background

The U.S. Environmental Protection Agency (EPA) and the U.S. Army Corps of Engineers (the Corps) are preparing an Environmental Impact Statement (EIS) that will consider the potential designation of one or more dredged material disposal site(s) in Long Island Sound (LIS), Connecticut and New York. This EIS will be specific to the western and central regions of LIS, although previous data collection included the entire Sound. The eastern regions of LIS will be evaluated at a later date. This proposed action is being conducted consistent with Section 102 (c) of the Marine Protection, Research, and Sanctuaries Act (MPRSA) and 40 CFR 230.80 of the regulations of the EPA under Section 404 of the Clean Water Act (CWA). The EIS will be prepared in accordance with the National Environmental Policy Act (NEPA), and the Council on Environmental Quality (CEQ) Regulations (40 CFR 1500 et seq.).

There are four dredged material disposal sites currently in use in Long Island Sound: Western Long Island Sound Disposal Site (WLIS), Central Long Island Sound Disposal Site (CLIS), Cornfield Shoals Disposal Site (CSDS), and New London Disposal Site (NLDS). See Figure 1 for the locations of the four disposal sites in LIS. In March 2002, the Corps and EPA made a determination to narrow the Zone of Siting Feasibility (ZSF), or the area in which existing dredged material disposal sites may be located, to initially consider the potential designation of one or more sites in the western and central regions of Long Island Sound, while deferring review of the eastern region to a later date. This narrowed ZSF includes the WLIS and CLIS sites.

This Fact Sheet is one of a series designed to inform and update the public on the dredged material disposal and site designation process. Other public involvement is encouraged in the form of workshops, meetings, and group discussions. This particular Fact Sheet describes some of the several field efforts that have been conducted in order to prepare this EIS and evaluate the condition of the proposed disposal sites. Other field efforts are described in previously published Fact Sheets. As described here, representative samples of benthic organisms (i.e., clams, worms), lobsters, and finfish have been collected for tissue analysis. These tissues were analyzed to determine the level of contaminants and for evidence of bioaccumulation[1].

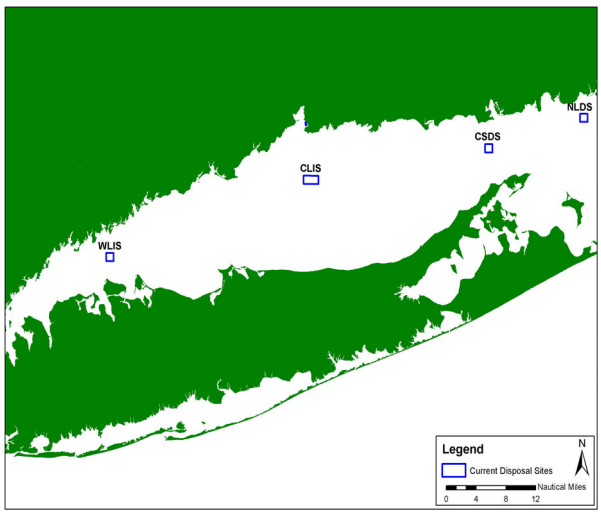

Figure 1. The locations of the four currently used disposal sites in Long Island Sound.

[1] Bioaccumulation describes the concentration of a contaminant over time in the bodily tissues of a living organism. The contaminant concentration in a tissue sample is related to the amount of contaminants in the water or sediment in which the organism lives and the length of time the organism has lived there.

All of the tissue samples were analyzed for polychlorinated biphenyls (PCBs), polycyclic aromatic hydrocarbons (PAHs), pesticides, dioxin, and metals, among other contaminants (see Table 1). The particular analytes collected were chosen due to their bioavailability or because they are known carcinogens. These analyses will be evaluated during the EIS development and may be helpful in the management of the proposed designated disposal sites.

Table 1. Tissue Sample Analytes

Pesticides

- DDT family (4,4'-DDD, 4,4'-DDE, 4,4'-DDT, 2,4-DDD, 2,4-DDD, 2,4,-DDT)
- Aldrin
- BHC (alpha, beta, delta, and gamma)
- Chlordane (alpha and gamma)
- Dieldrin
- Endosulfan I and II
- Endosulfan sulfate
- Endrin
- Heptachlor
- Heptachlorepoxide
- Methoxychlor
- Toxaphene

Polychlorinated Biphenyls

- Twenty-two individual congeners, including 18 NOAA National Status and Trends congeners
- Twelve World Health Organization Dioxin-like congeners

Dioxins and Furans

- Seventeen 2,3,7,8-substituted PCDD/PCDF congeners

Polynuclear Aromatic Hydrocarbons (PAHs) and Other

- Twenty-three PAHs (including the 16 EPA Priority Pollutants)
- Bis(2-ethylhexyl)phthalate
- Tributyltin

Metals

- Arsenic
- Beryllium
- Cadmium
- Chromium
- Copper
- Lead
- Mercury
- Nickel
- Selenium
- Silver
- Zinc

Benthic Tissue Survey

Benthic organisms living at disposal sites may exhibit signs of toxic contamination. Since all living organisms bioaccumulate contaminants, tissue samples were collected and evaluated to determine whether these contaminants have entered the food chain and how toxic they may be to organisms. The purpose of this survey was to collect sufficient biomass of the clam species (*Pitar morrhuana*) and the worm species (*Nephtys incisa*) for contaminant analysis, pursuant to guidance documents. These two species were chosen because they are common to the Sound, have a wide distribution, and are representative of LIS fauna.

Samples of *P. morrhuana* and *N. incisa* were collected from CLIS and NLDS from July 7 through 13 and August 25 through September 1, 2000. Since adequate biomass samples had already been collected from WLIS and CSDS, they were not included in this particular survey. The samples were obtained using a grab sampler deployed from the side of the F/V *Isabel S*, a 95-foot offshore dragger. Samples were collected from three stations in NLDS and seven stations in CLIS, with the objective being to collect three tissue samples from each station. Both sites contained sampling stations representing no-impact sites, historically dredged material disposal sites, and still active dredged material disposal sites and farfield sites. For a description of these sampling schemes, please refer to the Finfish Survey Summary Report.

Lobster Survey

In order to evaluate the bioaccumulation of contaminants in other organisms found in the proposed disposal sites, tissue samples were collected from lobsters both inside and outside the four existing disposal sites between July 26 and September 2, 2000. Unlike benthic organisms, lobsters are mobile and may move into or out of the disposal areas. Consequently, any accumulated contaminants detected in lobster tissue samples cannot be traced to the disposal site for the entire duration of contamination. Therefore, this

information will be helpful in determining the impacts that bioaccumulation has on the marine food chain and human consumers.

Figure 2 depicts the locations of the lobster sampling stations. The lobster tissue samples were collected from nine stations in LIS: one at each of the four existing disposal sites (WLIS, CLIS, CSDS, and NLDS), four reference stations for comparative purposes (marked REF 1-4 in Figure 2), and one offshore reference station at Hudson Canyon (marked HC REF 5 in Figure 2). The lobster sampling locations at the four currently used disposal sites were named Mound "I", NHAV93 buoy, Buoy B 92, and Seawolf after nearby landmarks and are shown in Figure 2. At each of the nine stations, an effort was made to collect five samples of five lobsters each, for a total of 225 samples. Due to lobster fishing restrictions in LIS, the proposed sampling amounts were not obtained. However, at least 15 lobsters were collected at each station. All samples were collected using standard lobster pots by local commercial lobster fishers.

Finfish Survey

In June and September 2000, the LIS finfish survey was coordinated with the Connecticut Department of Environmental Protection's Long Island Sound Trawl Survey (LISTS), an annual scientific assessment of the LIS finfish population.

There were six finfish target species chosen as representative of the general LIS finfish community: winter flounder (*Pseudopleuronectes americanus*), scup (*Stenotomus chrysops*), bluefish (*Pomatomus saltatrix*), striped bass (*Morone saxatilis*), windowpane flounder (*Scophthalmus aquosus*), and striped searobin (*Prionotus evolans*).

Each finfish sample was collected by towing a trawl for 30 minutes at 3.5 knots of speed along pre-determined CT DEP station lines. Each trawl length was approximately two miles long. The finfish samples were collected from seven trawl lines; three of the stations were the existing dredged material disposal sites (WLIS, CLIS, and CSDS), two were stations characteristic of sediment not found at the disposal sites (T4/T3 and M4), and one was used as a reference station for comparative purposes (M3). Site T4/T3 was characterized by a sedimentary transition from mud to

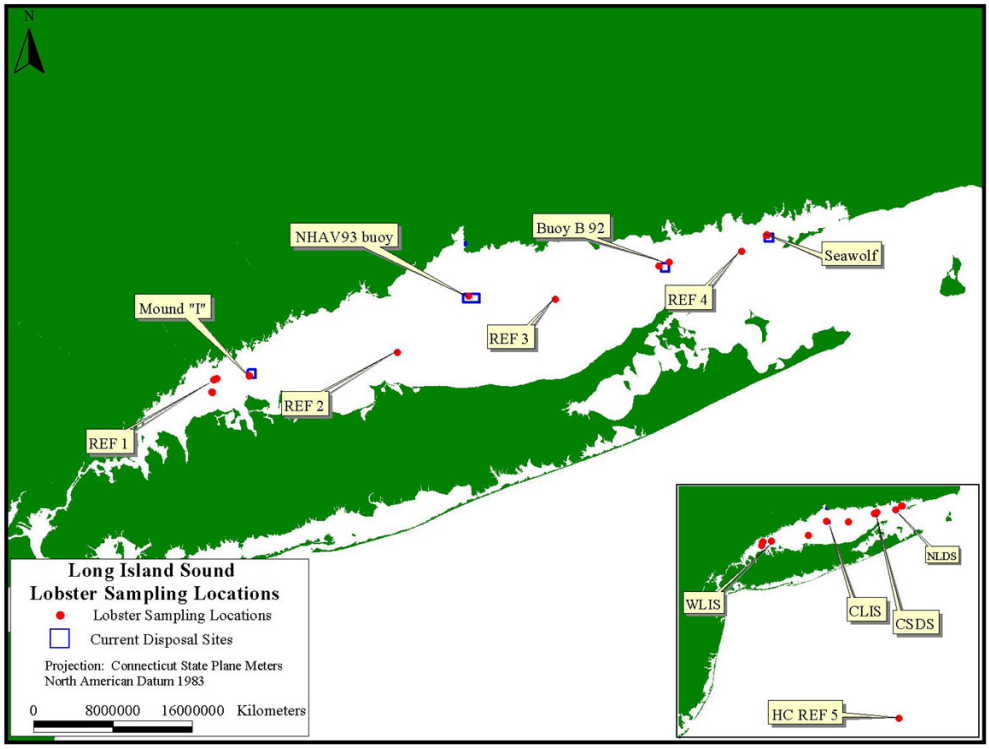

Figure 2. The locations of the lobster sampling stations.

sand as depth increased from 60 to 90 feet. Site M4 was characterized by mud habitat below 90 feet in depth. The NLDS site was sampled by a commercial fisherman under contract to CT DEP. Figure 3 illustrates the locations of the finfish sampling stations.

The CT DEP collected between one and three samples at each station. Between three and ten individuals from each of the six target species were collected for a total of 650 specimens. In order to obtain sufficient biomass for tissue analysis, a weight of 1,500 grams was determined as the minimum needed of each finfish species at each sample site. This weight could be one individual fish or several. After this target weight was reached, any surplus fish were recorded, measured, and released to the ocean.

Results

- The analyses of the tissue samples are ongoing.
- The analytical results, once assessed and reported, will be available at the next public working group meeting and on the EPA Web site (address is below).

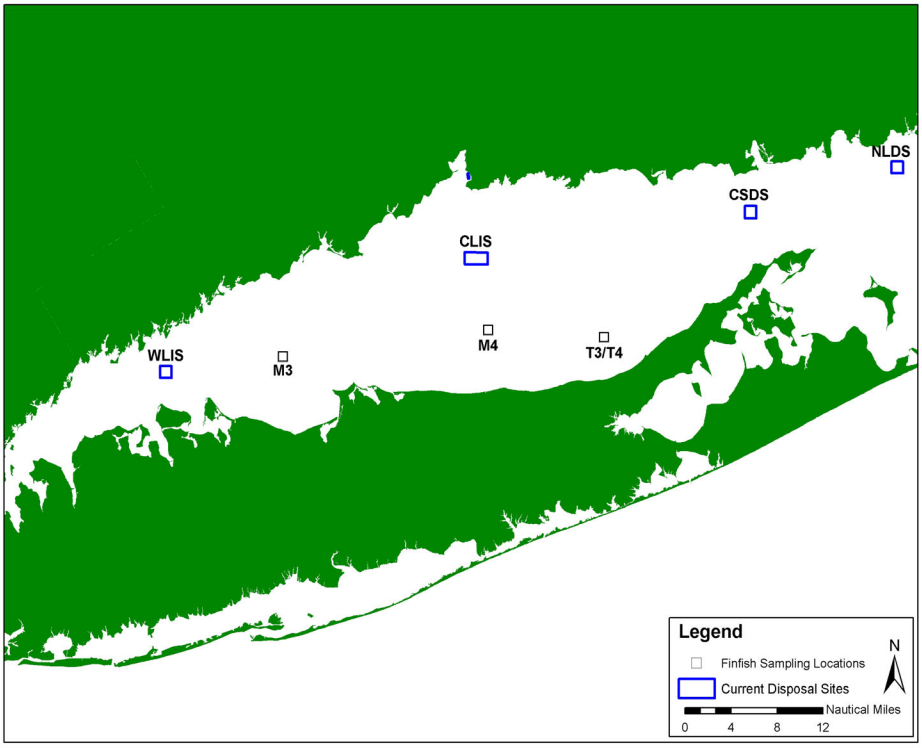

Figure 3. The locations of the finfish sampling stations.

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